

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s) : Andreas HENSEL  
Serial No. : To Be Assigned  
Filed : Herewith  
For : OPTOELECTRONIC SENSOR  
Art Unit : To Be Assigned  
Examiner : To Be Assigned

Assistant Commissioner  
for Patents  
Washington, D.C. 20231  
Box Patent Application

**PRELIMINARY AMENDMENT AND**  
**37 C.F.R. § 1.125 SUBSTITUTE SPECIFICATION STATEMENT**

SIR:

Please amend the above-identified application before examination, as set forth below.

**IN THE SPECIFICATION AND ABSTRACT:**

In accordance with 37 C.F.R. § 1.121(b)(3), a Substitute Specification (including the Abstract, but without claims) accompanies this response. It is respectfully requested that the Substitute Specification (including Abstract) be entered to replace the Specification of record.

**IN THE CLAIMS:**

On the first page of the claims, first line, change "What is claimed is:" to:

--What Is Claimed Is:--.

Please cancel original claims 1 to 15, without prejudice, in the underlying PCT  
Application No. PCT/DE01/01148.

Please add the following new claims:

16. (New) An optoelectronic sensor based on optodes, comprising:  
a semiconductor substrate;  
a plurality of separate light-sensitive sensors arranged on the semiconductor substrate;  
a light emitter located in a center of the semiconductor substrate; and  
a transparent optode material covering the light emitter and the plurality of separate light-sensitive sensors, wherein:  
the transparent optode material is reflective on a side that faces away from the semiconductor substrate.
17. (New) The optoelectronic sensor according to claim 16, further comprising:  
metal particles arranged into the transparent optode material and by which a reflectivity is created.
18. (New) The optoelectronic sensor according to claim 16, further comprising:  
an opaque material covering the transparent optode material.
19. (New) The optoelectronic sensor according to claim 16, wherein:  
the transparent optode material is a polymer to which an indicator substance is added.
20. (New) The optoelectronic sensor according to claim 19, wherein:  
the indicator substance includes pigment molecules.
21. (New) The optoelectronic sensor according to claim 18, wherein:  
the opaque material is a polymer.
22. (New) The optoelectronic sensor according to claim 18, wherein:  
the plurality of separate light-sensitive sensors are arranged as sectors and rotationally symmetrically around the light emitter.

23. (New) The optoelectronic sensor according to claim 16, wherein:  
the semiconductor substrate is an n-type silicon substrate, and  
the plurality of separate light-sensitive sensors are made of p-type silicon.
24. (New) The optoelectronic sensor according to claim 16, wherein:  
the plurality of separate light-sensitive sensors form photodiodes, and  
the light emitter is an LED.
25. (New) The optoelectronic sensor according to claim 16, wherein:  
the transparent optode material detects one of a nitrogen oxide and carbon monoxide.
26. (New) The optoelectronic sensor according to claim 16, further comprising:  
an oxidation material provided on a carrier material.
27. (New) The optoelectronic sensor according to claim 16, further comprising:  
a molecular sieve.
28. (New) The optoelectronic sensor according to claim 16, further comprising:  
a plurality of barriers arranged between transmission branches.
29. (New) The optoelectronic sensor according to claim 16, wherein:  
the light emitter can be operated by an electrical pulse.
30. (New) A gas sensor array, comprising:  
a plurality of array elements, each array element corresponding to an optoelectronic sensor based on optodes, the optoelectronic sensor including:  
a semiconductor substrate,  
a plurality of separate light-sensitive sensors arranged on the semiconductor substrate,  
a light emitter located in a center of the semiconductor substrate, and

a transparent optode material covering the light emitter and the plurality of separate light-sensitive sensors, wherein the transparent optode material is reflective on a side that faces away from the semiconductor substrate.

### **Remarks**

This Preliminary Amendment cancels original claims 1 to 15, without prejudice, in the underlying PCT Application No. PCT/DE01/01148. The Preliminary Amendment also adds new claims 16-30. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. Approval and entry of the Substitute Specification (including Abstract) are respectfully requested.

The underlying PCT Application No. PCT/DE01/01148 includes an International Search Report, dated July 18, 2001, a copy of which is submitted herewith.

Applicant asserts that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully Submitted,

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